

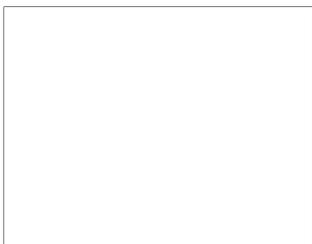
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**PHOTOGRAPHIC
INTERPRETATION
REPORT**

NATIONAL PHOTOGRAPHIC
INTERPRETATION CENTER

**SA-4 AND SA-6 MISSILE EQUIPMENT
IN THE USSR**



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TOP SECRET RUFF**SA-4 AND SA-6 MISSILE EQUIPMENT IN THE USSR****ABSTRACT**

1. The SA-4 (GANEF) and SA-6 (GAINFUL) missile systems are the most mobile, sophisticated surface-to-air missile (SAM) systems under control of the Soviet Ground Forces. Since May 1966, SA-4 equipment has been observed at a wide variety of installations in the USSR. SA-6 equipment was first observed outside of Emba Missile Test Center in June 1970 and has since been observed at several army barracks and at a former cruise missile site.

2. This report describes the status and location of SA-4 and SA-6 equipment in the USSR as reported from KEYHOLE photography through May 1972. The report includes maps, a table, and annotated photographs of selected installations.

INTRODUCTION

3. Both the SA-4 and the SA-6 missile systems were developed and tested at Emba Missile Test Center. The missile and transporter-erector-launcher (TEL) for each system were paraded in Moscow -- the SA-4 in May 1964 and the SA-6 in November 1967. The advantages of these systems over the older SA-2 and SA-3 missile systems are a high degree of mobility, fast reaction time, and relative self-sufficiency.

4. The locations of SA-4 and SA-6 equipment in the USSR are depicted in Figures 1 and 2. Table 1, keyed to Figures 1 and 2, lists the facilities in the USSR where SA-4 and SA-6 equipment has been identified on KEYHOLE photography. This table includes the SA-4 and SA-6 SAM training sites. Production, test, and research and development facilities are not included in this report.

BASIC DESCRIPTION

5. The first observation of SA-4 equipment outside Emba Missile Test Center was on photography of May 1966 at Orenburg AAA Barracks East. SA-4 equipment was observed at one other installation in 1966 and at two more in 1967. Following a lull in 1968, there were nine new observations in 1969, one in 1970, 11 in 1971, and five in the first five months of 1972.

SA-4 equipment was first observed
in Hungary in April 1970, and in Czechoslovakia in March 1972.

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6. SA-4 equipment has been observed at a wide variety of installations. These include 12 army barracks areas, five tactical SAM barracks, four SAM support facilities, two ordnance depots, two tactical SSM support facilities, two SAM firing ranges, two army training areas, and one tactical SSM barracks. Photography of March 1972 shows SA-4 equipment at Zheved Army Barracks Chernigov Southwest AL 1 (Figure 3).

7. At ten of the army barracks, at the training areas, and at the SAM firing ranges, the SA-4 equipment identified consisted in general of TELs with PAT HAND radars (the tracking and guidance radar for the SA-4 system). The SA-4 equipment identified at other installations generally consisted of sustainer and booster canisters, canister transporters, and other support vehicles. The presence of SA-4 equipment at Antipinskoye and Ashuluk SAM Firing Ranges in March and May 1972 was the first indication from KEYHOLE photography that SA-4 battalions were using firing ranges which normally served SA-2 and SA-3 units.

8. SA-6 equipment was first observed outside of Emba Missile Test Center in June 1970 at Leningrad SAM Training Facility, where four TELs and a probable tracking and guidance radar were sighted in a training configuration. Since then, SA-6 equipment has been identified at eight army barracks areas and, on one occasion, at a former cruise missile site. Most of this activity has occurred since August 1971. SA-6 equipment was first observed in Egypt in April 1971

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9. At two army barracks, Dauriya and Korosten, the SA-6 equipment was parked in areas formerly occupied by 57mm AAA regiments. No AAA equipment has been observed at either installation since the arrival of the SA-6 equipment, indicating that, at least in these instances, the SA-6 is replacing older AAA equipment.

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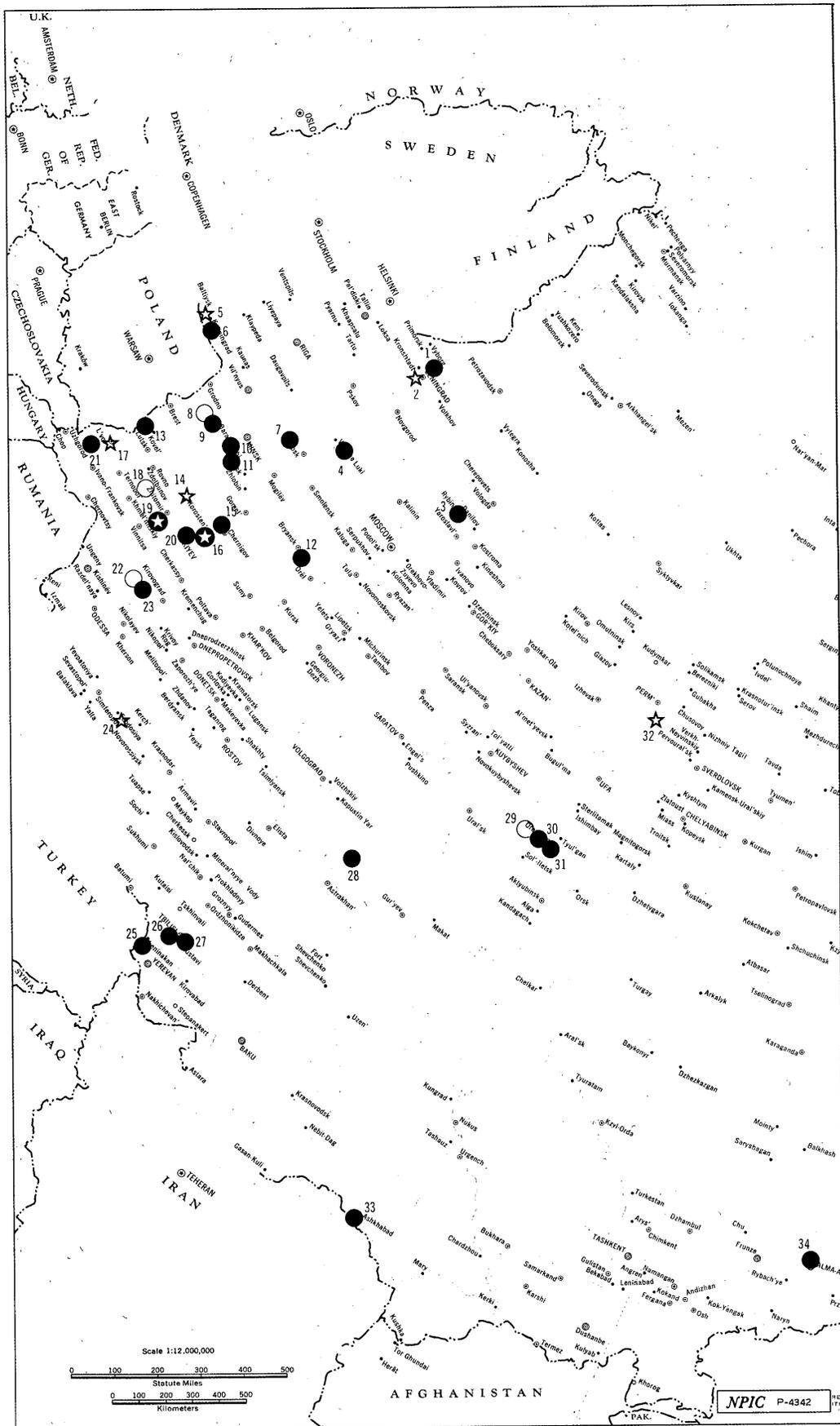


FIGURE 1. SA-4 AND SA-6 EQUIPMENT LOCATIONS, WESTERN USSR

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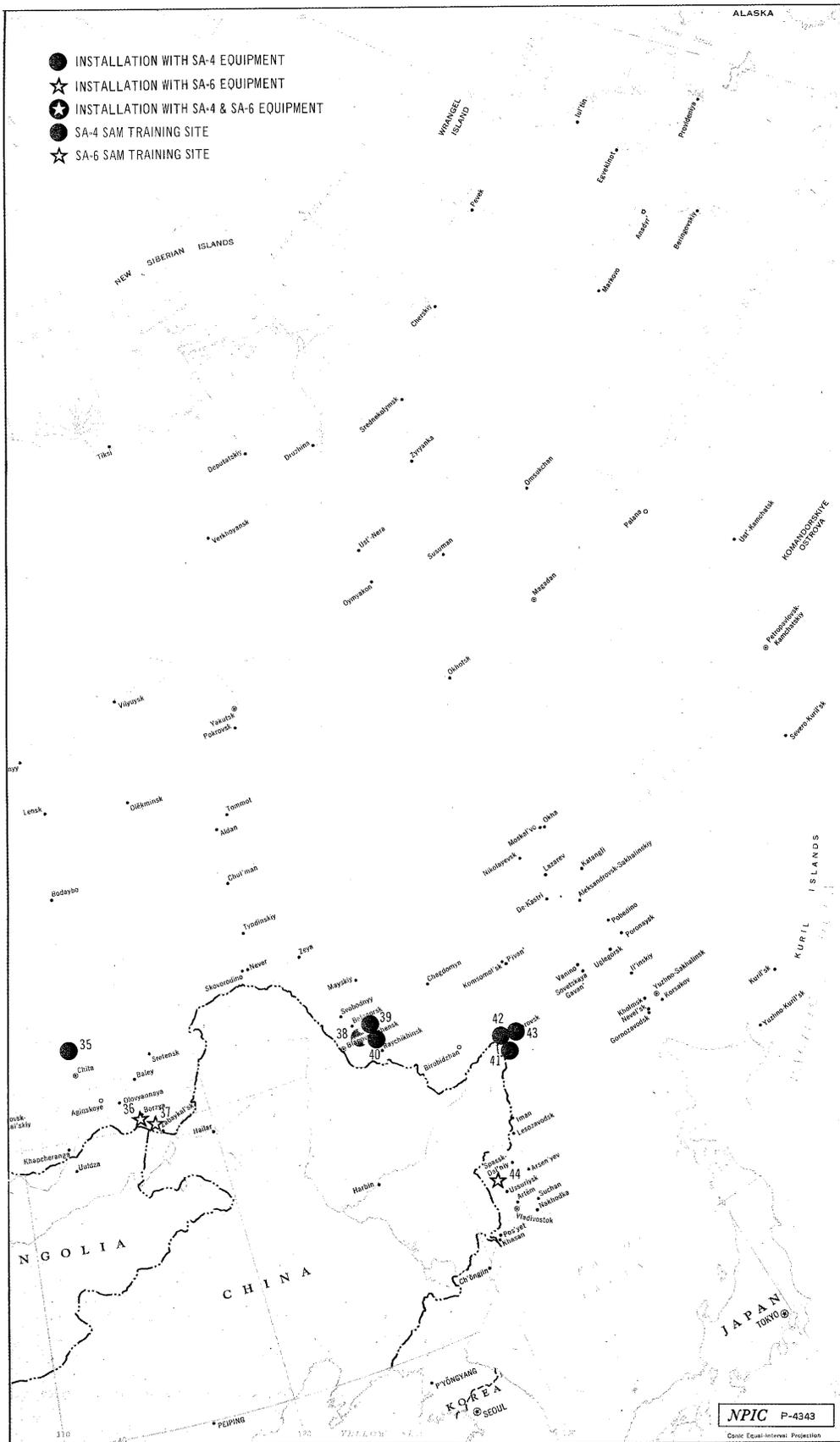


FIGURE 2. SA-4 AND SA-6 EQUIPMENT LOCATIONS, EASTERN USSR

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Table 1. Status and Locations of SA-4 and SA-6 Equipment in the USSR
 (keyed to Figures 1 and 2)

Item	Installation Name	Type of Equipment	Date Equipment First Observed	Equipment* Present					Date of Latest Coverage	Equipment Present					Remarks
				TEL	T/L	T/G Rad	LT Rad	Can		TEL	T/L	T/G Rad	LT Rad	Can	
1	Leningrad SAM Support Facility 1	SA-4	Feb 72					16	Feb 72					16	
2	Leningrad SAM Training Facility	SA-6	Jun 70	5	1	1	4	7	Feb 72	4					1 poss PAT HAND and 8 other poss TEL also reported on Feb 72 coverage
3	Rybinsk Tactical SSM Support Facility	SA-4	Mar 69					14	Mar 72					4	
4	Toropets Missile Support Facility	SA-4	Aug 71					25	Feb 72					25	This facility normally supports SA-2 and SS-N-3 missile activity
5	Kaliningrad Army Barracks Ballit AL 4	SA-6	Mar 72	9	2	1		3	Mar 72	9	2	1		3	A LONG TRACK acquisition radar was reported A poss SA-6 transloader was reported
6	Znamensk Tactical SAM Barracks AL 1	SA-4	Dec 67	12	6				Aug 71	3	3	2	2		
7	Lepel Tactical SAM Barracks AL 6	SA-4	Sep 69		19			70	Feb 72					20	SA-4 TELs and supporting radar were reported
8	Baranovich SAM Training Site B24-4	SA-4	Feb 72	6		2	1		Feb 72	6		2	1		SA-4 equipment parked in support area of former SA-2 site
9	Baranovich SAM Support Facility 2	SA-4	Jun 71	15	2	5	2		Jan 72					25	No SA-2 canisters or special purpose vehicles have been seen this former SA-2 SAM support facility.
10	Slutsk Tactical SAM Bks AL 6	SA-4	Jun 69		20				Feb 72					19	
11	Urechye Army Training Area Talitsa River	SA-4	Jun 71	17	5	6	2		Jan 72						
12	Karachev Tactical SSM Support Facility	SA-4	May 71					15	Mar 72					10	
13	Lyuboml Tactical SAM Bks AL 2	SA-4	Mar 69	4				6	Jan 72	10					
14	Korosten Army Barracks Uzh AL 1	SA-6	Aug 70	5		4	1		Aug 71	16	4		1		
15	Zheved Army Bks Chernigov SW AL 1	SA-4	Jul 71	26	5	8	4		Mar 72	27	9	9	5	7	74 SA-4 canisters reported
16	Vypolzov Army Barracks AL 1	SA-4 SA-6	Aug 71 Aug 71	3 4	1 2	1 1	2 1		Apr 72 Apr 72						No SA-4 or SA-6 equipment has been observed since Aug 71.
17	Lvov Army Barracks AL 3	SA-6	Aug 71	3		1			Apr 72	3	1	2	2		
18	Ostrog SAM Training Site B12-4	SA-4	Jan 72					22	Jan 72					22	SA-4 canisters located in former SA-2 site
19	Berdichev Army Bks Semenovka W AL 1	SA-4 SA-6	Aug 71 Aug 71	3 4					Mar 72 Mar 72					2	SA-4 TELs were present No SA-4 equipment was noted
20	Kiyev Army Bks 1st of May AL 3	SA-4	Aug 69	2	1				Jan 72	2			1		
21	Stryy Army Bks SW AL 1	SA-4	Oct 67	1	2			39	Mar 72	6	3	1	27		
22	Pervomaysk SAM Training Site A02-4	SA-4	Jan 72	3		1			Jan 72	3		1			Site is within the security fence of Pervomaysk Tactical SAM Bks.
23	Pervomaysk Tactical SAM Barracks**	SA-4	Jun 69	3		6		20	Jan 72	1	22	1	1	41	
24	Karangit Poss Missile-Associated Facility	SA-6	Aug 71	4		1			Mar 72						SA-6 equipment has not been seen since Aug 71.

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Table 1. (Continued)

Item	Installation Name	Type of Equipment	Date Equipment First Observed	Equipment* Present					Date of Latest Coverage	Equipment Present					Remarks
				TEL	T/L	T/G Rad	LT Rad	Can		TEL	T/L	T/G Rad	LT Rad	Can	
25	Artik Army Barracks	SA-4	Jan 72	3	3	1	2	10	Feb 72	3	1	1	2	10	SA-4 training exercise 1 nm west of barracks [redacted] included 17 TELs, 5 T/L, 2 poss PAT HAND radars, 5 sustainer canisters, & other support vehicles.
26	Tbilisi Tactical SSM Bks Koda AL 4	SA-4	Aug 69					1	Jan 72						2 poss SA-4 canisters reported (Nov 71)
27	Tbilisi/Vaziani Training Area East	SA-4	May 71	9	3	3	2	4	Feb 72						No SA-4 equipment has been reported since May 71
28	Ashuluk SAM Firing Range	SA-4	May 72						May 72						4 prob & 2 poss occupied SA-4 sites were observed. Specific equipment could not be identified on KH-4 photography.
29	Orenburg SAM Training Site A25-4	SA-4	Sep 69						Jan 72	6	1	2	1		This former SA-2 site was the first to be modified for SA-4 training. No SA-4 equipment was reported [redacted]
30	Orenburg Military Installation	SA-4	Dec 66			5			Jan 72						In Jan 72 vehicles were parked where SA-4 equipment had been observed previously. Specific equipment could not be identified because of small scale & haze.
31	Orenburg AAA Barracks East	SA-4	May 66			5			Jan 72	39	18	6	1	14	30 TELs noted [redacted] was high count before Jan 72. Approx 2 battalions of SA-4 equipment reported on all large-scale coverage [redacted]
32	Kungur Army Barracks South AL 1	SA-6	Aug 71	6	2	2	2	10	Feb 72	6	2	2	2	10	
33	Ashkhabad SAM Support Facility	SA-4	Apr 72	7	1	5	2	81	Apr 72	7	1	5	2	81	SA-2 equipment also present
34	Alma Ata Ordnance Storage Depot	SA-4	Apr 71					9	Mar 72					6	
35	Antipinskoye SAM Firing Range	SA-4	Mar 72	8		3			Mar 72	8		3			2 batteries in live firing exercise near SA-2 launch positions
36	Dauriya Army Barracks AL 1	SA-6	Nov 71		3	1	1		Mar 72		6				
37	Dauriya SAM Training Site A33-6	SA-6	Feb 72	4		1			Feb 72	4		1			First deployed SA-6 training site identified in the USSR on KH photography
38	Sredne-Belaya SAM Training Site A33-4		Jan 72						Mar 72						SA-4 training site is within the security fence of Sredne-Belaya Army Bks AL 1. No SA-4 equipment has been observed.
39	Tomichi Army Barracks AL 1	SA-4	Jun 69						Mar 72					25	9 prob SA-4 canister transporters reported on Jun 69 coverage. SA-4 canisters have been present on all subsequent coverage.
40	Sredne-Belaya Army Bks AL 1	SA-4	Apr 70	26	9		3	80	Jan 72	26	3	8	3	57	Approx 3 battalions of SA-4 equipment observed on all large scale coverage since Apr 70
41	Khabarovsk Arty Eng Depot DO 2	SA-4	Sep 69			10			Jan 72						No SA-4 equipment reported since Sep 69
42	Khabarovsk Army Bks Central AL 1	SA-4	May 71		1				Mar 72						No SA-4 equipment reported since May 71
43	Khabarovsk Army Bks AL 28	SA-4	Nov 71	3		1			Apr 72	2					
44	Sergeyevka Army Barracks AL 1	SA-6	Jan 72			1			Apr 72	9	1	1	2		

*TEL - transporter-erector-launcher
 T/L - transloader
 T/G Rad - tracking/guidance radar (PAT HAND with SA-4 system)
 LT Rad - LONG TRACK radar
 Can - sustainer canister

**Pervomaysk Tactical SAM Barracks will be reported in the future as part of Pervomaysk SAM Training Site A02-4 [redacted]

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10. In two instances, both SA-4 and SA-6 equipment were present in the same barracks area. These occurred in August 1971 at Vypolzov Army Barracks AL 1 (Figure 4) and at Berdichev Army Barracks Semenovka West AL 1. This was the only observation of SA-4 or SA-6 equipment at Vypolzov, but SA-4 and SA-6 TELs were at Berdichev, probably for maintenance, in November 1971 and January 1972. On coverage of March 1972, two SA-6 TELs were present at Berdichev, but the SA-4 TELs were not observed. (The SA-4 TELs may have been parked inside one of the vehicle sheds.)

11. Five SA-4 SAM training sites have been targeted in the USSR. At Orenburg SAM Training Site A25-4, three launch positions of a former SA-2 site were modified to accommodate SA-4 training. At two other former SA-2 sites (Baranovichi and Ostrog), SA-4 equipment was parked in the onsite support areas near the SA-2 launch positions. The SA-4 training sites at Pervomaysk and Sredne-Belaya (Figure 5) were constructed within the security fences of two barracks areas.

12. The first deployed SA-6 SAM training site was identified on photography of February 1972 near Dauriya Army Barracks AL 1 in the Transbaykal Military District (Figure 6). Four TELs and a probable tracking and guidance radar were deployed in a pattern roughly similar to the SA-6 equipment observed at Leningrad SAM Training Facility.

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REFERENCES

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MAPS OR CHARTS

Various US Air Target Charts, Series 200, scale 1:200,000

REQUIREMENT

NPIC/IEG/WGD/SSB Project 120201NT

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